



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/903,739 | 07/11/2001 | Phillip H. Paul | SD-8245.2 DIV | 9843 |

7590

05/21/2003

Timothy Evans
MS 9031
Sandia National Laboratories
7011 East Avenue
Livermore, CA 94550

EXAMINER

LUDLOW, JAN M

ART UNIT

PAPER NUMBER

1743

5

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/903,739

Applicant(s)

PAUL ET AL.

Examiner

Jan M. Ludlow

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 1743

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramsey (5858195).

5. Ramsey teaches a method of injection into a separation column (col. 11, line 49- col. 12, line 30) using electrokinetic pumping (abstract, line 9). Referring to figure 6,

Art Unit: 1743

buffer flows from reservoir 12B to reservoir 20B through separation column 34B.

Analyte flows from reservoir 16B to reservoir 18B. In "floating" mode, a potential differential is applied between reservoirs 16B and 18B to draw analyte through intersection 40B, while no differential is applied between reservoirs 12B and 20B. It is the examiner's position that with no potential difference between reservoirs 12B and 20B, flow of the running buffer is substantially stopped. Then in run mode, a differential is applied between 12B and 20B to inject the contents of the intersection by flowing the buffer to pass the analyte through the separation column, which may be a chromatography column (col. 10, line 17). It is taught that a second sample plug may be injected (col. 12, lines 20-25).

6. Ramsey fails to explicitly teach running the buffer through the separation column prior to injection.

7. It would have been obvious to inject a second sample plug through the column of Figure 6 in order to test a second sample as taught by Ramsey. In injecting a second sample, the sequence of events suggested is load, run, load, run, where the buffer is running through the column in run mode and stopped in load mode. Thus the running of the first sample constitutes the first flushing step, the loading of the second sample stops buffer flow and initiates analyte flow and running of the second sample constitutes injection and restarting of the buffer flow.

8. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramsey ('195) in view of Ramsey (6376181).

9. Ramsey '195 fails to explicitly teach hydraulic pumping.

Art Unit: 1743

10. Ramsey '181 teaches that electrokinetic pumping and hydraulic pumping are interchangeable in microfluidic devices (col. 5, lines 35-45).
11. It would have been obvious to use hydraulic pressure in place of electrokinetic pumping to move fluids through the device of Ramsey '95 in order to use alternative known pumping means as taught by Ramsey '181.
12. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramsey ('195) in view of Parce '259
13. Ramsey '195 fails to explicitly teach hydraulic pumping.
14. Parce '259 teaches that electrokinetic pumping and hydraulic pumping are interchangeable in microfluidic devices (e.g., claim 11).
15. It would have been obvious to use hydraulic pressure in place of electrokinetic pumping to move fluids through the device of Ramsey '95 in order to use alternative known pumping means as taught by Parce '259.
16. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being obvious over Ramsey and Ramsey or Ramsey and Parce, and further in view of Paul et al and/or Arnold et al.

The applied reference (Paul et al or Arnold et al) has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed

Art Unit: 1743

subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Ramsey and Ramsey or Ramsey and Parce each fail to teach a hydraulic electrokinetic pump.

Arnold and Paul each teach hydraulic electrokinetic pumps for use in microfluidic devices.

It would have been obvious to use an electrokinetic pump in order to provide the alternative hydraulic pumping of Ramsey and Ramsey or Ramsey and Parce in order to provide hydraulic pumping in a microfluidic device without mechanical parts as taught by Paul and/or Arnold.

17. Applicant's arguments filed February 25, 2003 have been fully considered but they are not persuasive.

18. Applicant argues that Ramsey doesn't teach hydraulic pressure, but applicant discloses that an electrokinetic pump provides the instant hydraulic pressure. Ramsey

Art Unit: 1743

teaches an electrokinetic pump. It is therefore the examiner's position that Ramsey inherently teaches hydraulic pressure in that the electrokinetic pump generates pressure to move liquids in the system.

19. In the event that this is not the case, alternative rejections have been made.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jan M. Ludlow whose telephone number is (703) 308-4039. The examiner can normally be reached on Monday-Thursday, 11:30 am - 8:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (703) 308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Jan M. Ludlow
Primary Examiner
Art Unit 1743

jml
May 19, 2003